

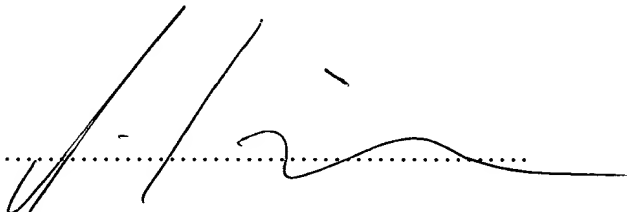


VERIFICATION OF TRANSLATION

INTERNATIONAL APPLICATION NO. PCT/CH 99/00184

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CH-8126 Zumikon, the translator of the attached document, state that the following
copy is a true translation to the best of my knowledge and belief.

Signature of translator


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Jan. 20th 2006
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Dated



Multifunction tool

The present invention relates to a multifunctional tool such as a pocket knife, pliers, a clamp and similar, specifically suitable for leisure time sport, expeditions, for handymen, for the military service and similar.

The time, in which the pocket knife or other hand tools have merely been used as pure tools has past since a long time. The longer the more further functions are added to the pocket knife, in these days, for instance, pocket knives are offered which can be used as multifunctional tools and domestic appliances, respectively. Thus, pocket knives include besides the knife-blades proper scissors, nail files, tooth picks, saws, etc.

Besides this, pocket knives and other tools include as of late integrally also flash lights and also pocket knives are even offered which contain integrally a watch in one of the two covers.

The object of the present invention is now to broaden the functionality of a pocket knife or generically of a hand tool to a so called multifunctional tool, this specifically because hand tools are carried along by a great many of persons in a multitude of situations of their life.

In accordance with the invention it is now proposed to arrange integrally in a multifunctional tool, such as a hand tool, such as for instance a multifunctional pocket knife also measuring and/or entering and display devices which serve for the measuring and/or entering and display devices which serve for the measuring and/or entering and displaying of a physical value.

It is proposed to arrange in or at the tool, such as a pocket knife at least one of the following exemplary measuring and display devices:

Altitude indicator, compass, barometer, thermometer, hygrometer, anemometer, speed indicator, a balance and/or a satellite navigation device.

In order that such a measuring and display device is able to function completely, the arranging of following parts is necessary:

At least one measuring sensor and/or entering member for the measuring and/or entering or determining of a physical value,

at least one converter for a converting the measured or entered physical value into a corresponding electrical signal,

a microprocessor which is suitable for deducing from the converted electrical signal a standardized physical standard value, and

a display of the measured or entered physical value in the corresponding unit, as well.

The display encompasses preferably a so-called LCD-display (Liquid Crystal Display).

Because of the dimensions of a tool such as a pocket knife it does not make sense to foresee an individual display for every one of all of the above suggested measuring and display devices for which reason the displaying occurs in a combined display common to all. However, in order to now display a certain measurement value in the display the arranging of a menu device is additionally needed by means of which the desired display can be selected from the various physical measure values.

Besides this it is obviously possible to foresee the already known function units integrally in a tool, such as such a pocket knife, such as for instance a flash light or a watch. In case that a watch is arranged it even is possible or preferred to arrange the time display in the same display which is also suitable for displaying or announcing, respectively, of the respective physical value. Accordingly, the display of the time can also be accessed

and displayed, respectively, by means of the mentioned menu-device.

The electrical supply of the measuring and display device can be accomplished either by a battery or, however, by a solar cell. Specifically when using a battery it is advantageous if a switch on or switch off member is provided, by means of which the measuring and display device can be by demand switched on and again be switched off, respectively. Further, it is also possible to foresee a automatic switching off which is activated after a certain time after a switching on or a last changing, respectively, by means of the menu device.

In case that a scale device is arranged in the tool suggested in accordance with the invention, such may be a spring scale which can be pulled out or be swung out, or it may be a weighing cell responding to pressure, which is located in the casing or can be swung out.

In the following, the invention will now be exemplary additionally explained by reference to the appended drawings.

There is illustrated in:

Fig. 1 in a perspective view a pocket knife equipped in accordance with the invention,

Fig. 2 a further variant of the embodiment of a pocket knife in accordance with the invention,

Fig. 3 a specific arrangement of a temperature sensor at a swung out awl of a pocket knife in accordance with the invention,

Fig. 4, illustrated schematically, various current and data connected and transmission, respectively, members between two pocket knife cover plates,

Fig. 5 schematically, swung out, a weighing device,

Fig. 6 a further embodiment of a weighing device, and

Fig. 7 again a further arrangement of a weighing cell in a pocket knife.

Figure 1 illustrates a multifunctional tool in accordance with invention in form of a pocket knife 1, including various mechanical function devices, such as for instance a knife blade 2 which can be swung out, scissors 3 which can be swung out, a rasp 4 which can be swung out,

respectively. The pocket knife is covered at both sides by cover plates 6 and 7, which as a rule are made of a plastic material, which however can obviously also be made of wood or metal. The pocket knife is held together by pins or locking bolts 9 and 10 located at its respective ends.

In the upper cover plate 6, a temperature sensor is for instance integrally arranged in the casing, for a measuring of the ambient temperature. The measured temperature signal is converted by a not illustrated converter and microprocessor arranged integrally in the casing 6 into the corresponding physical temperature value and the in this way determined signal in degrees Celsius is displayed in the display 14. The display 14 is preferably a so called LCD-display.

Preferably, several measuring and display devices are arranged for instance in the casing 6, but obviously a part of the measuring sensors may also be arranged in the casing 7. Because, however, due to reasons of space, as a rule only one display 14 is foreseen, it conclusively is necessary that it is possible to switch between various displays, which may for instance be accomplished by means of a menu device. In order to operate the menu device a pressure sensor is arranged at the illustrated example, which for instance is again arranged in the casing 1 under the illustrated Swiss cross. By a depressing of the "Swiss cross" 16 it is thus possible to switch from the illustrated temperature measuring to the display of the

measured air pressure. Additionally it is also possible that for instance upon a prolonged depressing the display switches automatically off, and then for instance the time is displayed. Only after a further short depressing a physical value is again displayed in the display 14.

Figure 2 illustrates a further embodiment of a multifunctional tool, such as a pocket knife, in a kind which finds use predominantly in the Anglo-Saxon area. Various mechanical tools are arranged in the pocket knife 31 in a U-shaped casing, which can be swung out around a locking pin or a pivot pin 35, respectively, such as the swung out knife 4 illustrated in Fig. 2. In order to arrange this swung out knife blade 4 fastened in the swung out position a corresponding cover 33 is preferably plugged onto the U-shaped casing, which in order to pivot the knife back can again be removed. This cover can either be completely removable or may also be pivotally mounted to the U-shaped casing to pivot about a further axis. Analogue to Fig. 1 a display 14 is also illustrated in Fig. 2 laterally in the U-shaped casing, in which again the measured physical values can be displayed. Obviously, this display can also be arranged in the area of the U-leg surface of the casing or even in the cover 33. At the illustration according to Fig. 2 the task is primarily to show that the present invention is not restricted to conventional pocket knives, such as for instance used in Western Europe. Such as already mentioned above, the present invention is basically suitable for any kind of

multifunctional tools, to which also the most various designs of pocket knives belong.

Figure 3 illustrates a specific embodiment variant of the arranging of a temperature sensor 39 at the tip of an awl 37, whereby fig. 3 illustrates the awl in a swung out state. Such a temperature sensor can be used for example to measure during grilling the temperature inside of meat in order to see how far the roasting and cooking process has advanced.

Specifically in the case where a plurality of different measuring sensors and possibly also in both cover plates displays are foreseen it is necessary to arrange in both cover plates 6 and 7 corresponding measuring sensors, circuits, microchips and similar. Thus it is, however, also important that a current and also a data exchange, as well, can take place between the two cover plates 6 and 7 which may proceed for instance via the two locking pins 9. It is, however, also possible to arrange between the two cover plates 6 and 7 for instance at the end area an additional cover or connecting plate 43, for the transmission of data and the supply of current. From time to time pocket knives are provided with supporting brackets such to for instance mount knife to a supporting chain. These supporting brackets can again serve for a transmitting of data and the supply of current.

Figure 5 illustrates simplified a swung out weighing element 52 onto which a weight can be hung.

Figure 6 illustrates a mounting ring 53 at an end area, which at the one hand can serve for mounting of the pocket knife 1 to a necklace or however again for the weighing of articles.

Figure 7 finally illustrates a pocket knife 1 in which a weighing cell 55 responding to pressure is arranged in one of the two covers. Thus, the pocket knife 1 may be placed onto a support 52 and an article 57 to be weighed may be placed onto the pocket knife. Because in the illustrated illustration in Fig. 7 no display is visible it makes sense to store the measured value such that the measured weight becomes visible upon a removing of the article 57.

The multifunctional tool illustrated in Figs. 1 to 7 in form of pocket knives and pliers are obviously merely examples which may be changed, modified or supplemented with further elements in any arbitrary way. In this way it is obviously possible to arrange besides the mentioned measuring and display devices if needed further devices such as for instance an anemometer which can be swung out.

Furthermore, all tools and also measuring cells in the examples of the Figures 1 to 9 are described or illustrated, respectively, as arranged to possibly be swung

out; obviously these tools and measuring devices may also be arranged to be able to be moved or slid out in the tool.

The tool or manual tool, respectively, proposed in accordance with the invention, such as specifically pocket knife, is specifically suitable for activities in sports, such as for instance sailing, for mountain sports, kinds of flying sports, diving, etc. But it is also specifically suitable for expeditions, in the military field and also for handymen and specific professional activities.

Patent claims

1. Multifunctional tool, characterized by at least one measuring, and display device (12, 14) for a physical measure value arranged in the tool (1).
2. Tool in particular according to claim 1, characterized by at least
 - one measuring sensor for a measuring of a physical value;
 - a converter for converting the measured value into a electrical signal;
 - a microprocessor for a converting of the electrical signal into a standardized physical unit, as well as
 - a display of the measured physical value in the corresponding unit.
3. Tool in particular according to one of the claims 1 or 2, characterized in that the measuring and display device (12, 14) is an altitude measuring device, compass, barometer, thermometer, hygrometer, wind speed measuring device, a scale, and/or satellite navigation device.
4. Tool in particular according to one of the claims 1 to 3, characterized in that a so called menu circuit (16) is foreseen in order to activate in case of a plurality of measuring devices the respective measuring and displaying of a given desired physical value.

5. Tool in particular to one of the claims 1 to 4, characterized in that the display (14) is a so called LCD (Liquid Crystal Display) display.

6. Tool in particular according to one of the claims 1 to 5, characterized in that further a watch and/or a flash light is arranged integrally in a tool casing, whereby preferably the time display is located at or in, respectively the display for the physical value.

7. Tool in particular according to one of the claims 1 to 6, characterized in that the measuring and display device can be switched on or off, whereby preferably the switching off occurs automatically after a certain preset time.

8. Tool in particular according to one of the claims 2 to 7, characterized in that a weighing device is arranged to be able to be pulled out or swung out of the pocket knife.

9. Tool in particular according to one of the claims 1 to 8, characterized in that the power supply for the measuring and display device proceeds by means of a battery and/or of a solar cell.

10. Multifunctional tool, characterized in that it is a pocket knife, including at least one casing and an integral or releasable cover, in or at which casing a number of tools are located, and in which cover and/or in which casing at least one display device (14) for a physical value is located.

11. Tool in particular according to one of the claims 1 to 10, characterized in that at least two casing parts or covers (6, 7, 31, 33) are foreseen, which are

interconnected by suitable means (9, 10, 35, 41, 43) for the transmission of current and the exchange of data, respectively.

12. Tool in particular according to claim 11, characterized in that the transmission means are pins (9, 10, 35), plate like elements (43) or ring shaped elements (41).

13. Tool in particular according to one of the claims 1 to 12, characterized in that a weighing cell (55) responding to pressure is located integrally in the tool.

Abstract

A multifunctional tool as e.g. a multifunctional pocket knife is characterized by at least a measuring and display device (12, 14) for measuring and displaying a physical value.

(Fig. 1)